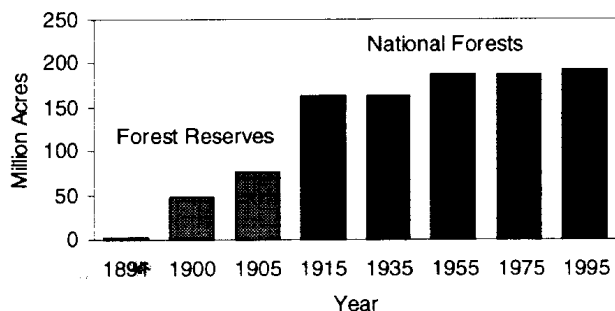


## Chapter 2

### Managing Multiple Uses and Protecting Resources: 1905 to 1945

The national forests became the first Federal Government effort to manage a large natural resource enterprise. In 1905, when the USDA was first authorized to administer these lands, there were 83 forest reserves totaling 75 million acres. Within 5 years, President Theodore Roosevelt had proclaimed 67 more reserves — bringing the total area to 172 million acres. The national forests remained close to that number and area until 1945 and constituted fully 7.6 percent of the U.S. land base (fig. 1).



**Figure 1.** National Forest System lands, including the forest reserves, 1891–1995

Source: USDA Forest Service; Bureau of the Census. 1975. *Historical Statistics of the United States, Colonial Times to 1970*. U.S. Department of Commerce, Washington, DC. p. 533.

#### ***The General Character of National Forest Resource Management***

The first 40 years of national forest management is best characterized as fitting the multiplicity of natural resource uses into forest and rangeland ecosystems and protecting them from fire and destruction.

Local land users were the driving force behind the management of national forest resources. They included stockowners, hunters, anglers, trappers, loggers and lumbermen, summer home residents, farmers, homesteaders, irrigation and power companies, miners, a wide variety of recreationists, hotel and resort managers and their guests, community water systems, scientific researchers, State game managers, travelers just passing through, and others. The principal constraint on resource uses and

management was that they be applied in ways that would protect the permanence of both the flow of national forest uses, products, and services and the resources themselves.

Because resource demands were modest and there was plenty of space for all within the national forests, the number of uses and users grew throughout this period with little conflict, even though the uses often overlapped or adjoined. Trails and roads for forest fire protection and administration also provided access for hunting, fishing, and other recreational activities. Regrowth of browse, grasses, and trees on harvested timber areas improved wildlife food supplies and cover. Ranchers and sheepherders were sensitive about big game and their predators using rangelands, but national forest managers were usually able to find ways to reconcile these concerns without major conflicts. Forest fire damage was greatly reduced to an average annual burn of 234,000 acres during the first half of the 1940's but was still a major concern in 1945, with more than 10,000 ignitions per year. National forest managers improved the quality of recreation experiences and protected forest resources by establishing campgrounds, sanitary facilities, and fireplaces. Game populations were largely maintained and in some cases were improved. The research natural area concept established and implemented a natural ecosystem baseline for monitoring and studying resource performance under the multiple-use management philosophy. Abandoned and eroding farmlands and the heavily cutover woodlots acquired in the 1920's and 1930's under the Weeks Act of 1911, mainly in the Eastern States, were being reforested and improved and were on their way to being rehabilitated and restored as forest ecosystems.

An emerging problem in 1945 was the management of mining claims, particularly their surface resources. The homesteading of lands suitable for agriculture within national forest boundaries was no longer an issue. Though rangelands were generally improving, there were still significant acreages in unsatisfactory condition. Increased timber harvest from the huge national forest reserves effectively contributed to World War II lumber and plywood production and military needs.

## Early National Forest Staffing

Young graduates with technical forestry training from eastern colleges and woods-wise men with western ranching and logging experience made up the early national forest administrative and field force. The latter made up the district ranger workforce, and many advanced to higher national forest management roles. There were fewer professional foresters. They provided technical resource management support for forest and rangeland uses, including inventorying and mapping and preparing technical management and work plans.

The Forest Service published the national forests' first "Use Book" (*The Use of the National Forest Reserves, Regulations and Instructions*) in the summer of 1905 (USDA Forest Service 1905). It guided national forest use, protection, and management.

The Forest Service developed its first written and practical district ranger exams in 1906. Each ranger was a land and resource management steward for several hundred thousand acres. Often, he (there were no women rangers until the 1970's) also served as the "policeman, fish and game warden, coroner, disaster rescuer, and doctor" (West 1992). He settled disputes between cattlemen and sheepherders, organized and led firefighting crews, built roads and trails, negotiated and supervised timber sale contracts, issued grazing and other permits, carried out reforestation and disease control projects, and ran surveys. He was the national forest manager who was closest to the uses and the users. One of his major roles was to gain the cooperation of local forest users by earning their respect. Employing

local people with backgrounds similar to those of local residents and national forest users was an important factor in gaining local people's understanding of national forest rules and standards and in encouraging local people to help in fighting forest fires and in accomplishing other forest tasks. Local residents often provided important information on resource uses and conditions.

In the early 20th century, areas in the West were still in transition from a "pioneer" economy of rapid settlement and development — often with exploitive use of timber and range resources — to the conservation and wise use of resources over the longer term. The national forest manager's role was to help users make the transition from the settler's easy access to public lands and resources to a user's managed access with established rules and regulations. Although forest managers sought local support for these rules, many times it was not easy to obtain. Early national forest history is marked by local resistance to national forest managers' restrictions, particularly when it came to domestic livestock



*Helen Dowe, a local Forest Service employee, packing equipment into pickup for a survey trip into the Montezuma National Forest (now part of the Grand Mesa Uncompahgre and San Juan National Forests, Colorado).*

grazing — the most intensive use of national forests at the time.

### **Decentralized Decisionmaking**

The district ranger became the local line officer and decisionmaker. He implemented national forest uses, protected resources from fire and destruction, and ensured their permanent productivity. He was guided by the technical support and management plans of professional foresters and the general guidelines of the 1905 Use Book and its successor management manuals and handbooks. Forest resource use allocations became, in many ways, a joint or participative activity between the users and the district ranger. The users' needs and their locational constraints were jointly considered with national forest resource capabilities and limitations. In this way, managing multiple uses became first a locational and area decision matter, and second a matter of selecting and applying the practices and methods that would ensure the protection and permanence of resources and compatibility among the overlapping and adjoining uses.

Except for mining, individual national forest uses were largely determined by local user needs and demands. These grew steadily with increasing local populations and improved access. Thus, managing multiple uses developed as a highly decentralized, local decision process within each district under each district ranger's stewardship, with oversight from the forest supervisor, regional forester, and periodically the Forest Service's Washington Office. Management options were bounded by resource capabilities and compatibility among uses, but were also influenced by the users' demands and location constraints. Management of the expanding multiple uses could not be systematically planned on an area-by-area basis for the long term. *Public resource management needed to respond incrementally, year by year, locale by locale, and forest by forest to the changing and growing user demands and the evolving state-of-the-art of resource management in the face of new scientific knowledge, feedback derived from experience, and emerging technology.* Technical management plans and maps, however, were helpful in classifying and locating resource capabilities and identifying their limitations. On-the-

ground implementation of these management plans required determining appropriate uses, management practices, and operational methods on a site-by-site basis. Over the years, this practical management requirement, fitting multiple uses compatibly with each other and the capabilities of the particular situations in ways that would sustain the resources, made it very difficult to define a universal system for managing multiple uses on a site-specific basis.

National forest management was formally decentralized in 1908 when regional offices were established in Denver, Ogden, Missoula, Albuquerque, San Francisco, and Portland (Williams 1994; Clepper and Meyer 1960). Regional foresters (then called district foresters) were authorized to make on-the-ground decisions for their respective regions. Some 377 Forest Service Washington Office employees were reassigned to these new regional offices. The Washington Office also published a new "Manual of Procedure" detailing procedures and policies for the Washington Office and the new regional offices (Williams 1994). Forest supervisors remained accountable for all that happened on their forests; district rangers were responsible for, and took charge of, what happened on their districts. The philosophy was that the person on the ground was the best judge of management situations and options. The public was encouraged to turn to and work with the district ranger, not the forest supervisor. Such a decentralized organization needed some control and, therefore, some uniform performance standards. The "Use Book" initially served this purpose; in later years, it was replaced by expanding manuals and handbooks. Regional and Washington Office people periodically conducted performance reviews and on-the-ground inspections.

### **Professional Forester Recruitment Accelerates**

As forestry schools expanded, the Forest Service aggressively recruited professional forestry graduates. In the mid-1930's, the Forest Service restricted all appointments at the technical forest management level to candidates who had earned a 4-year forestry or related degree. This recruitment policy signaled an end to the era of the self-taught, locally experienced "rugged outdoorsman" in national forest line positions — though some continued to serve as late

as the 1960's. Throughout the 1905 to 1945 period, the Forest Service was the leading employer of professional foresters. Graduates from forestry degree programs or elective options in related fields, such as range or wildlife management, were also eligible and often recruited by the Forest Service.

Conversely, many universities recruited experienced foresters for their teaching faculties from the Forest Service. Aldo Leopold, who developed his concept of wildlife management on southwestern national forests from 1909 to 1928, for example, joined the faculty of the University of Wisconsin and began the first academic program in game management in 1933 — the year he published America's first textbook on game management.

### **Research and Cooperation with State and Private Owners**

The Department of Agriculture began research related to national forest resources in 1903, with investigations of forested rangelands. A USDA Office of Grazing Studies was established in 1910. In 1915, as the need for research on national forest grazing problems became more acute, the Forest Service was given the responsibility for such research.

The Forest Service established its first experiment station at Fort Valley, Arizona — ponderosa pine country — in 1908, with others soon following in Colorado, Idaho, Washington, California, and Utah. Other early research addressed the distribution and growth habits of commercial tree species. Equally important was the need to develop inventory and growth-measurement systems for standing timber and volume-measurement systems for harvested logs. Forestry research studied forest protection, harvest, and regeneration methods. Another important research target was the relationship between forest cover and watershed conditions and performance to runoff and infiltration.

In 1915, the Forest Service created an independent but supporting Branch of Research, which formulated research policies, defined research goals and objectives, and consolidated various research activities. This initiative led to the McSweeney-McNary Act of 1928, which authorized a system of regional

Forest Service forest and range experiment stations, a comprehensive survey of the Nation's forest resources — implemented nationally in 1930 — and an expansion of the broad forestry research program serving not only national forest needs, but also those of States, the forest industry, and other private forest landowners.

Thus, as the use and demands for national forest resources grew, the Forest Service sought to strengthen its underlying science, knowledge, and technology through research on resource protection, management, and improvement and by recruiting professionally trained foresters, range specialists, and wildlife experts. It also began to share its growing knowledge about the use and management of forest and rangeland resources through cooperative programs with State and private landowners.

By 1945, the Forest Service was not only managing the national forests, the most extensive public or private forest management enterprise in the United States, it was also distinguishing itself as the Nation's leading professional forestry agency through its research, its State and private cooperative assistance, and its nationwide forest survey.

### ***Implementation and Coordination of Resource Uses and Management***

Coordinating the management of multiple uses where they were complementary, competitive, or overlapping on the same acre, or on adjoining acres with the national forest users, was largely the role of the district ranger and the forest supervisor. This was particularly important where grazing or timber uses and management could significantly influence waterflows, since national forests were specifically created to "protect the flow of waters." In the early decades, coordination also became important where game conflicted with timber or livestock use. This coordination almost always involved cooperation with State fish and game agencies. Under the State's Rights Doctrine, States had the primary role for managing wildlife and fish populations and regulating hunting, fishing, and trapping. The national forest role was limited to habitat management — which indirectly affected such populations.

Because the science of ecology was still developing and largely descriptive, a holistic ecosystem approach to managing multiple uses — encompassing and addressing the forest as a whole including the interdependencies among all its parts — was impractical at the time. The limited knowledge and science that existed about the Nation's natural resources, including their use and management, before 1945 was organized into textbooks and taught in forestry and other natural resource management educational programs by discipline or function rather than holistically.

Shifts in the way the Federal Government organized its planning and budgeting in those early decades of national forest management also had some influence on the national forest funding structure and implementation. In the early 20th century, Federal budgeting was based on an objects-merited approach that funded staff, materials, furniture, buildings, and other things needed to carry out Government operations. Between 1920 and 1945, the Federal Government shifted from the objects-merited system to a functional approach that focused on funding programs for carrying out Government activities such as road construction or reforestation. This functional approach became an effective way to develop and justify programs and budgets and the appropriations for their implementation — a shift that also favored organizing Federal Agency programs by function. The shift also strengthened the decisionmaking influence and power of both the Executive Branch and the Congress over national forest resource management programs and the functional allocation of funding to resource uses and specific management activities. It likewise shifted some of the balance of decisionmaking power from the local, on-the-ground level to the Washington level. However, since national forest management was largely custodial and very limited at the time, the impacts were also limited. In time, however, this approach would lead to funding the management of some resource uses more than others. The Forest Service expressed strong concerns about the appropriate balance of funding among resource uses in the 1960's and 1970's, when the timber and road programs were dominating national forest funding as the Nation focused its priorities on economic growth and housing goals.

In 1974, the Forest and Rangeland Renewable Resources Planning Act would be designed at the behest of its sponsor, Senator Hubert H. Humphrey, to respond to this concern.

From the very beginning, national forest uses and management were implemented by function. In the early decades, national forest budgets were allocated to fund specific activities such as range management, forest fire control, timber sales and management, and road construction. Over time, those functions increased. National forest regulations and management guidelines and much of the management planning were also organized by function; management activities and uses were likewise reported by function. For these reasons, national forest management is described by function in the following sections and chapters. Coordination among the resource uses and management will be described as it has been reported in Forest Service annual reports and elsewhere.

### **Managing Grazing by Cattle and Sheep**

More than half the area of the forest reserves (renamed national forests in 1907) was rangeland where unregulated grazing had gone on since the 1870's and 1880's. Grazing on public domain rangelands was an established use for many ranchers and sheepowners. At the end of the 19th century, however, due to two decades of severe drought and overgrazing, much of the public rangeland was being depleted. The establishment of the forest reserves in 1891 led to a conflict between stock-owners and conservation and preservation interests about the continued unregulated grazing on the newly reserved lands and the need to control it, particularly sheep grazing, to protect the soil, range and forest vegetation, and waterflows. Conservation and preservation interests were made up of mostly eastern legislators, conservationists, aesthetic and recreational groups, many western urban people, and irrigationists who were afraid that any use, however small, might damage their water supplies. Timber interests were not overly concerned because in 1891 the best timberlands were owned by private interests and the forest reserves amounted to only 17 million acres. In 1893, this polarization over use brought the creation of new forest reserves to a halt,

when President Grover Cleveland, after proclaiming two additional reserves in Oregon — totaling 4.5 million acres — refused to create any more reserves until Congress provided authority to manage the already existing 17 million acres (Roth, no date; Robinson 1975; Rowley 1985).

In April 1894, the Department of the Interior's General Land Office (GLO) issued its first official policy statement regulating grazing. It prohibited "driving, feeding, grazing, pasturing, or herding cattle, sheep, or other livestock" on all forest reserves (Colville 1898b). However, this order was poorly enforced. For example, a National Academy of Science committee appointed in 1896 reported 2 years later that, with only one exception, it had found no evidence of Government efforts to protect the forest reserves from overgrazing (U.S. Senate 1898; Wilkinson and Anderson 1985).

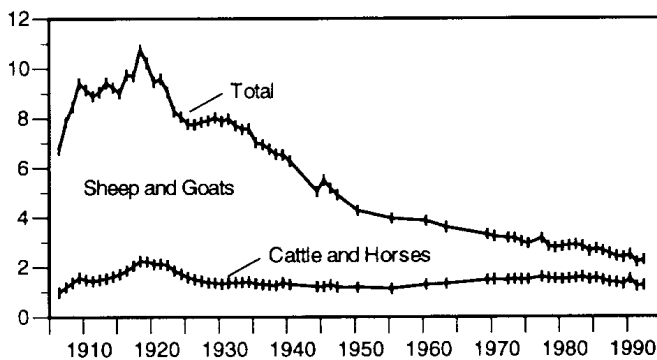
The grazing issue was resolved after the signing of the Organic Act. The GLO gradually permitted cattle grazing. Then, with assistance from USDA research and the Division of Forestry, it determined that if sheep were properly controlled, their grazing would not harm the range or forest soils and vegetation. They also determined that the welfare of the people would be better served by a USDA-recommended "special tract permit system." Sheep were a concern because they greatly outnumbered cattle and were thought to cause soil and vegetation damage (Coville 1898a, 1898b). To avoid such damage, the GLO adopted the special tract system and required graziers to obtain a written permit to graze a specified number of animals on a specific forest area, which the area could support without damage. When the forest reserves were transferred to the Forest Service in 1905, national forest managers



*Sheep grazing on the Kaibab National Forest, Arizona, August 1914.*

continued this system. Grazing fees were imposed on permittees in 1906.

Continued range grazing and vegetation research led to the introduction of deferred and rotational grazing systems and other management innovations on national forest rangelands — practices that contributed to improving their vegetative condition and soil stability. By the late 1920's, grazing management was shifting from "rule of thumb" management to "scientific range management" (Alexander 1987). The research-based national forest approach of matching the number of grazing animals and use to the carrying capacity of the permitted rangelands gradually reduced the animal unit months (AUM's), except during World War I when stocking was increased to provide for military needs (West 1992). (An AUM is 1 month's occupancy of the range by one mature cow, weighing 1,000 pounds, and her calf or the equivalent for other grazing animals). Livestock numbers on national forest rangelands, primarily sheep, were reduced from 8.7 million annually before 1935 and a maximum of 10.8 million in 1919 to 5.5 million by 1945 (fig. 2). In 1934, a *Report on the Western Ranges: A Great but*



**Figure 2.** Number of livestock permitted to graze on national forests, 1906–1992

Source: USDA Forest Service.

*Neglected Natural Resource* (U.S. Senate 1936) revealed that national forest rangelands were in significantly better condition than those in private ownership or in the public domain. National forest ranges had improved from 1905 to 1934, while private and other public ranges had deteriorated significantly (Gardner 1991).

Until the passage of the Taylor Grazing Act of 1934, unregulated grazing on the basis of free and open range continued on the remaining unreserved public domain. The Act introduced regulated grazing on the remaining public domain administered by the Department of the Interior's newly established Grazing Service. In 1946, the administration of public grazing lands was placed under the Bureau of Land Management (BLM), which merged the Grazing Service with the GLO.

### Managing Wildlife Resources and Use

Hunting, fishing, and trapping were major national forest uses not specifically cited in the Organic Act, due in part to uncertainty about the role of States and State rights in managing wildlife and fish (West 1992). The Forest Service cooperated with State and Territory game wardens to enforce their laws that protected fish and wildlife on national forests.

The proclamation of national forests itself probably had only a minimal effect on wildlife and fish. It may have reduced poaching levels that might have

occurred otherwise. In the longer term, however, as use and interest in wildlife and fish populations grew and became differentiated, the extensive, contiguous national forest lands provided many options for designating wilderness areas, wildlife refuges, and management areas and for implementing a wide variety of habitat management practices. National forests also became a source of big game animals for reintroduction into areas with extirpated populations.

Early wildlife management efforts focused on controlling livestock and wildlife predators (wolves, coyotes, mountain lions, and eagles) and prairie dog colonies that were considered a hazard to livestock. At the time, the eradication of predators was a widely favored step toward restoring big game populations, which had been reduced to very low levels by the turn of the century, primarily due to unregulated hunting and killing for commercial markets. Game refuges were established on National Forest System lands — often in cooperation with State initiatives to conserve wildlife and increase game populations. Some were also established to concentrate deer and coyotes away from livestock grazing areas to reduce wildlife competition for forage and to reduce livestock predation. In 1939, the 661 refuges and sanctuaries on national forests totaled 36.5 million acres. Their management was limited largely to a few basic principles. Multiple-use coordination of wildlife and domestic livestock grazing, for example, was oriented toward protecting and encouraging the growth of game populations and avoiding conflicts between livestock and game animals and their predators. Predator eradication favored both game and livestock populations. However, where use imbalances between livestock and game occurred, national forest managers, with State cooperation, managed both wildlife habitats and populations more rigorously.

In the late 1920's, national forest managers hunted excess mule deer to reduce the damage being caused by overextended populations on the forage resource on the Grand Canyon Federal Game Preserve (Kaibab National Forest). By 1924, the North Kaibab deer herd had grown from 3,000 to 4,000 animals in earlier years to approximately 100,000 animals. By 1925, the forage resources were severely depleted

and deer die-off had reduced the herd to 32,000. During the latter half of the 1920's, livestock grazing on the preserve remained fairly stable at about 9,000 head, including 5,000 sheep. Although livestock grazing had been somewhat reduced, range conditions did not improve and deer continued to die of starvation. Deer herd reduction was thought to be a key management need and option. In 1927, such reduction was successfully challenged at the U.S. District Court level. The U.S. Supreme Court, upon appeal, however, sanctioned Government hunters to kill Kaibab deer (Russo 1970). In 1928, Government hunters further reduced the herd.

In the Pacific Northwest, issues over timber management on the Mount Olympus National Monument, established on 620,000 acres of national forest lands in 1910 to protect the Roosevelt elk, showed that public concern for protecting the elk outweighed the public demand for timber production. During and after World War I, to develop communities and jobs, national forest managers assigned the Monument and its surrounding national forest area a top priority for road construction and timber production. This action was long and widely opposed by some interests and supported by others. In the mid-1930's, the Forest Service and the USDA Bureau of Biological Survey recommended shooting excess elk in the area around the Monument to prevent overgrazing, disease, and starvation. However, public outrage in the nearby Seattle area and among conservation groups, both of whom felt a great concern for the elk, led to the transfer of the Monument and its adjacent national forest lands into the new Olympic National Park in 1938. Although the herd reduction goal was credible, the public believed that forest management had been insensitive to the elk herd (Wolf 1990).



*Group of mule deer holing up in winter cover after a new snowfall on the Bridger-Teton National Forest, Wyoming, 1940.*

Notwithstanding the Mount Olympus National Monument experience, national forest managers initiated elk restocking in 8 of the 11 contiguous Western States (excluding California and Nevada). By 1940, the numbers of elk on national forests had increased from less than 100,000 to more than 150,000 (Thomas et al. 1988).

A new, positive concept of habitat management to support wildlife began to emerge from the Kaibab and other experiences. Depression-era public works programs, particularly the Civilian Conservation Corps (CCC), achieved a great deal of habitat improvement. On the administrative side, by 1936 the Forest Service had a Washington Office Director of Wildlife Management, with 61 people assigned to wildlife management activities — mainly in the field (Roth 1989).

### **Managing Water Resources**

The primary and explicit policy goal of the Organic Act was to ensure favorable conditions for water-flows. It responded to farmers and communities who wanted to be assured that grazing and logging would not adversely affect their irrigation and domestic



water supplies. Soil conservation became a prime concern in managing grazing and safeguarding streams from logging. Improved forest fire protection and prompt reseeding of severely burned-over areas reduced the potential for rapid runoff and erosion damage.

National forest managers cooperated with communities to protect the national forest sources of their water supplies. While timber harvesting and management were practiced on some such areas, they were planned to protect municipal water supplies.

States, communities, various Federal agencies, private irrigation companies, miners, and others were permitted to construct and manage dams for farm irrigation, municipal water supplies, mining, hydropower generation, and other purposes. National forest hydroelectric engineers, among the first professional engineers on the national forests, assessed the suitability of water resources for hydroelectric projects and provided technical

evaluation of water development proposals. (USDA Forest Service 1990).

Some dams had been built on national forests while they were still public domain or forest reserves administered by the Department of the Interior. Between 1933 and 1942, the CCC built many more small dams for recreation, water conservation, and fishing. By 1945, there were more than 2,500 such dams. Most had been privately built and were operated under national forest permits, but the Forest Service owned and managed about a third.

### **The Weeks Act of 1911 and Eastern National Forests**

The belief that forests influenced waterflows and contributed importantly to flood control became a driving force behind the purchase and establishment of national forests in the Eastern States, where there was no public domain to reserve as forest land. Congress initially addressed the idea in 1900, when it funded a study to investigate the need for a Southern Appalachian Forest Reserve. Although the

investigation "unmistakably" showed such a need on the grounds of bolstering the southern economy and improving flood control, no reserves were proclaimed. Nevertheless, support for eastern forest reserves grew.

In 1911, to protect the headwaters of navigable streams, Congress authorized the purchase of lands to establish the eastern national forests (Shands and Healy 1977). This legislation became known as the Weeks Act of 1911. By 1920, more than 2 million acres had been purchased. In 1924, the Weeks Act was expanded to include land purchases to protect the flow of streams for irrigation or to promote a future timber supply. By 1945,



*Fish dams on stream in Poliza Canyon on the Santa Fe National Forest, New Mexico, 1936. These dams benefit fish, wildlife, riparian area, stream channel condition, and stream condition and flow.*

more than 20 million acres had been added to 44 new national forest locations mostly in the Eastern States. Much of the purchased acreage was submarginal and abandoned, often seriously eroding, farmland — a legacy of the agricultural recession of the 1920's and the Great Depression. Before they were abandoned or sold, the forested portions of these lands were often stripped of all saleable timber without regard for the land's future. Protection was not enough. In many places, these seriously damaged woodlands and watersheds needed reforestation and improvement. National forest managers promptly began restoring forest ecosystems on non-stocked lands by rehabilitating damaged woodlands; eliminating feral dogs, cattle, and hogs; and generally improving the related watersheds.

### Managing National Forests for Timber Production

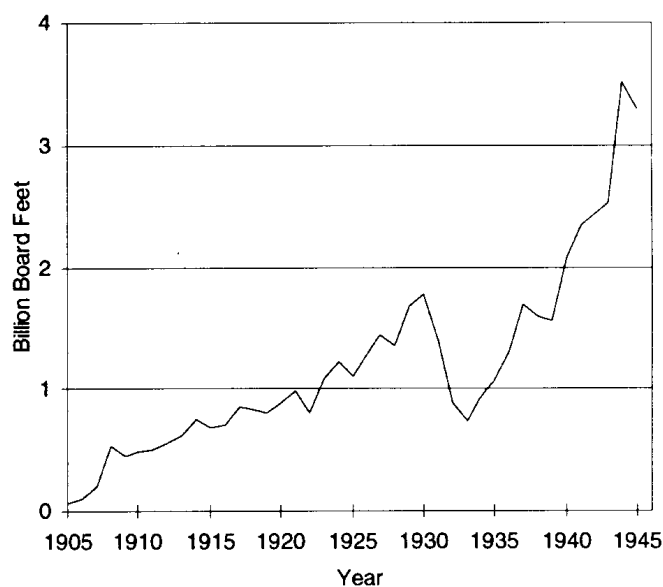
In 1898, a year after the passage of the Organic Act, the Department of the Interior's GLO made its first timber sale on a forest reserve. The Homestake Mining Company purchased 15 million board feet of timber on South Dakota's Black Hills Forest Reserve at \$1 per thousand board feet.

By 1901, the GLO's Division "R" and the USDA Division of Forestry were dividing the task of managing the forest reserve lands — Department of the Interior personnel patrolled the reserves and USDA foresters provided technical management support. Forest reserve administration was regulated by Interior's *Forest Reserve Manual* of 1902. When the reserves were transferred to the USDA, the general objective of the forest reserves was defined in the Forest Service's 1905 Use Book as:

... preserving a perpetual supply of timber for home industries, preventing the destruction of forest cover which regulates the flow of streams, and protecting local residents from unfair competition in the use of forest and range. (USDA Forest Service 1905)

The forest reserves provided a legacy of timber sales for national forest lands. However, the timber industry preferred to log off the more accessible private lands and their own lands, so national forest timber sales remained minor in scale. Until World

War II, national forest timber remained largely a reserve to be used, when needed, to meet national demands or to supplement industry's supply from private lands as its supply became more limited or was depleted. Although some national forest managers pressed for large, long-term timber sale contracts to encourage economic and community development, the annual harvest in 1920 was barely a billion board feet (Wolf 1990). In 1926, national forest managers curbed the modest timber sale program and extended long-term sales to avoid compounding the economic and business problems of a depressed timber industry. A soaring timber economy in 1930 increased national forest timber sales to 1.7 billion board feet (bbf), but the Great Depression shrunk harvests for the balance of the decade (fig. 3). In 1940, national forest timber sales reached a new peak of 1.8 bbf. Then, as the demands of World War II grew, sales rose to the 3.0-bbf level (West 1992).



**Figure 3.** National forest timber harvests, 1905–1945  
Source: USDA Forest Service.

To guide the use of standing timber and ensure the forest's future usefulness, all national forests were required to prepare working plans. Each forest's working plan displayed its approximate timber yield to avoid overcutting and to calculate and manage

the rate of timber harvest consistent with its yearly growth and prospective local needs (USDA Forest Service 1908). By the 1920's, detailed management plans were being prepared on each timber-producing forest. Such plans estimated the amount of timber that could be cut from "working circles," which were areas that contained enough timber and timber growth to support local forest industries. They also provided information on the area from which a "continuous" supply of timber could be grown and cut; the amount of timber that could be harvested annually or by decades and still maintain timber growth at a level that would replace the harvested volume; cutting guidelines to ensure the best crops for future harvests; the location of overmature or decadent stands most in need of early harvest; and the contribution of the timber harvests to local industry, employment, and community stability (Wilkinson and Anderson 1985).

Between 1905 and 1945, the annual national forest timber harvest averaged less than a billion board feet. The 40-year harvest total represented only 2 percent of the Nation's total timber supply from domestic sources and involved less than 2 percent of the total national forest area. In this period, timber harvesting and management introduced relatively small changes into forested ecosystems. Such changes were generally seen as benefiting game populations because they created desirable openings in mature and old-growth forest areas, which, in turn, provided edges, openings, and regrowth of young trees and other vegetation that increased the spatial diversity of wildlife food and cover.

Timber harvesting was seen as a tool for increasing national forest timber growth and transforming national forests from "wild" to cultivated forests (USDA Forest Service 1908). Most timbered areas on national forests were available for timber harvesting. However, green timber could be sold and harvested only where regeneration was reasonably assured and where harvesting would not reduce future timber supplies or damage streamflows (USDA Forest Service 1907).

During national forest management's early decades, selective cutting was the most common method of timber harvest (Robinson 1975). However, as the

various silvicultural shortcomings of selective cutting in some forest types became apparent, harvesting gradually shifted toward clearcutting and other even-aged regeneration methods such as shelterwood and seed tree. National forest managers eventually recognized that Pacific Coast Douglas-fir generally did not regenerate and grow successfully in the shade of trees remaining after individual tree selection cuts. Other, less economically desirable shade-tolerant species, such as hemlock, would eventually replace most Douglas-fir in the resulting regenerated stand. Even-aged forest management, including harvesting and regeneration, which removed all trees (clear-cutting), was most successful in regenerating Pacific Coast Douglas-fir. Another consideration at the time was the susceptibility of the often shallow-rooted residual old-growth Douglas-fir trees to windthrow and volume losses in partially harvested stands. Other factors favoring even-aged methods included easy and effective slash removal and, in the case of severely diseased and infested areas, the easy removal of infected and infested trees (Robinson 1975). Clearcutting, however, did not become the National Forest System's predominant method of timber harvest and regeneration until well after World War II. But clearcutting patches of Douglas-fir in the Pacific Northwest did begin as early as the 1920's and became more widespread and general by World War II (Robinson 1975).

### **Reforestation**

The reforestation of burned-over lands and non-restocked harvested areas initiated on the forest reserves during their administration by the GLO was greatly accelerated on the national forests after 1905. The Forest Service increased the number of tree nurseries and seedling production. Acres reforested rose from about 1,000 per year before 1905 to 25,000 by 1933. The establishment of CCC camps on national forests, with their ready supply of tree-planting labor, jumped the acres reforested annually to 69,000 in 1934 and to more than 150,000 in the late 1930's and early 1940's. As the acquisition of abandoned farmlands expanded rapidly in the East after 1924, the reforestation of former croplands and fields became a high priority.

With the entry of the United States into World War II in 1942, reforestation on national forests came to a

partial halt. The total cumulative acres reforested to that time, including replantings, was approximately 1.5 million acres, of which 1.1 million were evaluated as established plantations — indicating about a 75-percent success rate. However, 255,000 acres needed improvement to free more desirable species and allow the better quality trees to grow more rapidly, especially where young planted trees were being crowded by natural seeding and sprouting of lower value, less desirable trees and brush (USDA Forest Service 1905–1945). In 1940, an estimated 3 million acres of national forest lands needed reforestation. About a third were on eastern forests and the balance were in the West, where many burned-over areas needed restocking. In the decades following 1905, forest fires were a major destructive force, particularly on western national forests (USDA Forest Service 1905–1945).

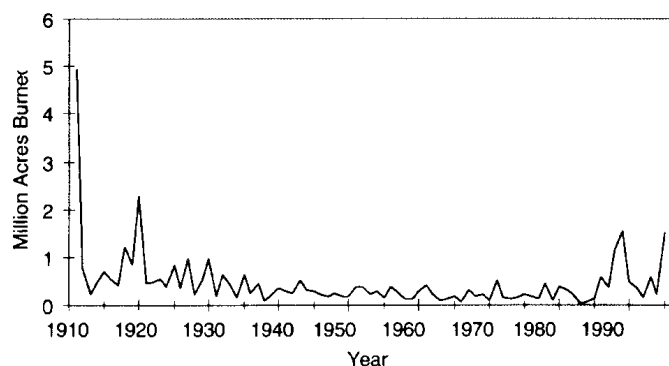


*Hired crew replanting Douglas-fir in 1936 on the 622-acre area devastated by the Yacolt burn on the Gifford Pinchot National Forest (formerly Columbia National Forest), Washington State. By 1950, more than 19,500 acres had been reforested on this severe burn.*

### Improvement of Forest Fire Control

Throughout the 1905 to 1945 period, forest fires were a destructive force on national forests. Lightning (the principal cause), the lack of adequate detection and rapid access systems, and persistent drouthiness contributed greatly to the large areas burned each year. Organized protection began soon after 1905. The Expenditures and Receipts Act of 1913 authorized regular funds for developing road and trail access on national forests. It directed that 10 percent of all money received by national forests be available for road and trail construction and maintenance (USDA Forest Service 1983). Although forest fire protection improved steadily, huge conflagrations still occurred. In 1910, forest fires burned 5 million acres on national forests; in 1919, they destroyed 2 million acres. There were seven other

years when forest fires burned between 500,000 and 1 million acres: 1917, 1918, 1924, 1926, 1929, 1931, and 1934 (fig. 4). The annual burn in the 30 years from 1905 to 1935 averaged nearly 600,000 acres (USDA Forest Service 1905–1945, 1993a).



**Figure 4.** Acres burned by wildfires on national forests, 1910–1994

Source: USDA Forest Service.



*Aftermath of August 20, 1910, hurricane and fire, Coeur d'Alene National Forest near Wallace, Idaho.*



*Forest ranger on forest fire patrol duty, Cibola National Forest, New Mexico, 1923.*

Between 1935 and 1944, the standardized fire detection and control system initiated in the early 1920's became fully effective and the persistent drouthiness abated. This helped reduce the average annual burn to 224,000 acres. Many other factors also helped. The forestwide transportation system planning effort, first established between 1928 and 1932, focused on access and transportation coverage for fire control needs (USDA Forest Service 1990). The fire-weather forecasting and fire danger rating systems and information on forest fuel distribution and hazards were greatly improved. More motor-driven fireline-building and trench-digging equipment — including

tractors, plows, bulldozers, and brush-breaking tools — and improved portable chainsaws with light-weight gasoline motors were introduced. High frequency two-way radio sets led to much more effective communication during fire detection and suppression. Experimental work with smokejumpers began in 1934. By 1940, when the operational program began, the number of trained smokejumpers had risen to 24. By 1944, there were 120. Smokejumpers greatly increased the speed of attack on remote lightning-caused fires that were difficult to access by ground transportation and raised the probability that such fires would be suppressed while still small (USDA Forest Service 1905–1945).

The CCC, which operated from 1933 to 1942, with a majority of its 1,300 camps located on national forests, also contributed importantly to the effectiveness of fire prevention and suppression. Corpsmen constructed many fire towers, telephone lines, trails, and roads that substantially improved fire detection and communication systems and provided more



*Ranger putting up notice telling campers to extinguish fires, Smuggler Mountain road, White River National Forest, Colorado, June 1915.*

rapid fire access. They also contributed their firefighting capabilities to controlling forest fires.

Despite the fact that World War II drained national forests of many of their trained firefighters, national forest managers were able to sustain this improved forest fire suppression performance. They managed to do so by recruiting and training military personnel located at nearby facilities and centers, 16- and 17-year-old boys from local high schools, and elderly men and women (for lookout posts only) from nearby communities.

### **Insect and Disease Management and Control**

In 1902, Congress authorized the USDA Bureau of Entomology and Plant Quarantine as a clearing-house for advice on the timing and location of insect control measures on national forests (forest reserves before 1907). It also authorized the Bureau to provide technical skills for examining reported outbreaks and to advise the Forest Service on pesticide application and insect control methods. The Bureau



*Forest ranger recording morning readings of fire-danger weather data on the San Isabel National Forest (formerly Cochetopa National Forest), Colorado, 1939.*

set up a Division of Forest Insect Investigation to provide these services, and national forest managers vigorously used Division entomologists throughout the 1905 to 1945 period to evaluate insect outbreaks, test and develop control methods, and design and oversee practical control operations (Gill and Dowling 1945; USDA Forest Service 1905–1945).

During the early years, reconnaissance and expert inspections to discover insect damage and locate problems before they became epidemic received major emphasis. Insect control funds were very limited. National forests, without dedicated control funds, gave special emphasis to testing and evaluating control methods. Where serious infestations were found, reconnaissance focused on the most valuable timber species. Control activities were concentrated on the forests with valuable timber and where damage from previous outbreaks had been extensive.

The first substantial insect control funding came in 1922 for a major epidemic of ponderosa pine bark beetles scattered over 1.3 million acres in southern Oregon and northern California — causing a loss of 1.5 bbf of valuable ponderosa pine timber. About half the infested area was on private land; a small amount on State forest land; and the balance on national forests, Crater Lake National Park, Indian reservations, the public domain, and revested Oregon and California (O&C) Railroad grants. Many more acres were threatened. This situation of multiple ownerships and public jurisdictions typified the complexity of controlling major insect infestations. Congress provided \$150,000 of emergency funds for control on Federal lands subject to State and private landowner cooperation. The result was a gratifying cooperative control effort between the Department of the Interior, the State of Oregon, private landowners, the USDA Bureau of Entomology, and the national forests, which constituted 285,000 acres in the infested area.

During this period, ponderosa pine bark beetles were generally the most destructive insects on national forests and other ownerships in the western coniferous forest. There were epidemic outbreaks in all of the Western States, killing large numbers of trees, severely impacting the growth of the surviving trees, and setting the stage for devastating fires. Epidemics often started in trees weakened by drought or fire or damaged by windthrow, snow-break, or root rot. Timber losses were often the most obvious result of insect epidemics, but sometimes infestations caused tree stands to revert to shrubs or grasses or to regenerate to less desirable tree species. Wildlife hiding and thermal cover was altered, making wildlife movement more difficult and often disturbing their composition and distribution. Tree loss from insect infestations often resulted in several years of downstream flooding and soil erosion.

Almost every year from 1906 to 1945, bark beetle control was carried out on one or more national forests. During this era, a total of 7.6 million acres were treated throughout the six western national forest regions (Fowler 1993). Because bark beetles did their damage under the bark, spray treatments with bark sprays such as lindane were not as effective against bark beetles as they were against

insect defoliators that damaged tree foliage. Bark beetle control consisted of combinations of felling infested trees, bucking them into short lengths, peeling off their bark, or burning them. Occasionally, standing infested trees were burned.

### **White Pine Blister Rust Control**

In the 1920's and 1930's, white pine blister rust, an introduced fungal disease with no natural controls in the United States, became the object of a major control effort. In 1916, the Office of Blister Rust Control in the USDA Bureau of Plant Industry initiated blister rust control activities in the Northeast, where the disease had first been found in 1910. Control activities centered mainly on non-Federal lands and consisted of eradicating the *Ribes* spp. plant — the rust's alternate host. Field teams systematically searched eastern white pine stands and uprooted *Ribes* plants (gooseberry and currant bushes). Blister rust control began on New Hampshire's White Mountain National Forest in 1924 and then became more heavily concentrated on national forests in Pennsylvania and the Lake States. Blister rust was not a serious problem in the Appalachian national forests of the South because there were too few *Ribes* plants. In 1937, white pine blister rust was reported to be fully arrested in the Northeast by the *Ribes* eradication effort (Benedict 1981).

White pine blister rust was first found in the Western United States in the State of Washington in 1921. It had apparently been introduced from British Columbia, where it had first been discovered in 1910. A White Pine Blister Rust Advisory Board, made up of representatives of public and private landowners, was quickly formed. In 1925, they recommended that all affected ownerships act promptly and vigorously to protect the western white pine timber resource, about 1.5 million acres, and its dependent industry in the Pacific Northwest. The first western *Ribes* eradication efforts began in 1930, when the rust had spread to northern Idaho and western Montana. Blister rust was found in California's western white and sugar pines in the mid-1930's, and control efforts were initiated on its national forests in 1935. Due to limited funding, the western-wide national forest blister rust control effort remained modest until 1933, when the CCC became available and greatly accelerated national forest *Ribes* control.

In 1941, *Ribes* had been eradicated on half of the 2.6 million acres on public and private western white pine and sugar pine timberlands needing blister rust control. The end of the CCC program and war's impact on national forest staffing halted this control program during World War II.

### **Other Pest Management Activities**

National forest managers addressed many other insect and some other disease outbreaks between 1905 and 1945. The general strategy was to detect outbreaks in their early stages when they were easier and less costly to control. National forest managers preferred silvicultural control methods, but used chemicals when they were recommended and effective — after 1930 on the eastern national forests and somewhat earlier on the western national forests — where insect outbreaks could become extensive very quickly.

When spruce budworm heavily infested the foliage of Douglas-fir stands on Wyoming's Shoshone National Forest and astraddle the entrance to Yellowstone National Park in 1928, national forest managers found that such outbreaks could be controlled by chemicals sprayed from high-pressure ground sprayers or dusted from airplanes. If the spruce budworm, a defoliator, was not controlled in one or two seasons, it could kill trees by stripping them of their foliage or affect their growth by defoliating and killing their tops — an unsightly prospect for the entrance to Yellowstone National Park.

Another introduced European disease, the chestnut blight, was killing American chestnut trees in the East. Because there were no known methods to control this blight, national forest managers in the southern Appalachians initiated a systematic effort to market infested and threatened timber before the blight ruined its commercial value. Because no effective controls were available, our Nation lost the chestnut tree as an endemic component of eastern hardwood forests.

In the 1930's and 1940's, pests became troublesome in the Lake States, where large acreages of cutover, burned-over forest lands and abandoned farms had been planted with pine species. In 1934 and almost every year thereafter except the war years, national

forest managers applied chemical treatments to suppress pine sawflies and other defoliators on one or more national forests in these States.

### **Managing Recreation Uses and Activities**

During its first decade, national forest management of recreation uses was largely passive. It supported such established recreation activities as hunting, fishing, trapping, and camping. The 1905 Use Book recognized camping and required district rangers to support State regulations on hunting, fishing, and trapping. Roads and trails were often designed to accommodate recreation access needs as well as other purposes — the Use Book provided for road and trail signs. The *Report of the Forester for Fiscal Year 1912*, for example, observed that national forests were being visited more and more due to the construction of new roads and trails. Some 13,500 miles of trail and 1,500 miles of road were constructed between 1905 and 1912 (USDA Forest Service 1912).

Recreation use was growing very rapidly on national forests near large cities. Camps and cottages on some of the most accessible and desirable national forest lands dotted many canyons and lakeshores that had been set aside and divided into lots to accommodate as many visitors as possible. Commercial uses in recreation areas, such as grazing and timber harvests, were adjusted to meet recreational needs. National forest managers excluded livestock from permitted recreation areas and prohibited livestock driveways in canyons heavily used by campers. They restricted timber harvesting to very light or no cutting at all close to lakes and in other places where it was desirable to preserve natural beauty unmarred for public enjoyment (USDA Forest Service 1911–1913).

National forest managers' sensitivity to the public's interest in recreation grew in the early decades. It was strongly influenced by withdrawals of selected scenic and other attractive national forest lands for national parks and by the establishment of the National Park Service (NPS) in 1916. In 1915, for example, the Forest Service sought and received authority to issue 30-year leases, parallel to the established national park practice, to increase the incentive for individuals to build summer homes





*A Sunday drive among the giant redwoods on the Six Rivers National Forest, California, was a popular diversion in 1913.*

and for commercial interests to develop hotels, resorts, and other services for the recreating public. In 1917, there were permits for 814 summer homes, 26 hotels, and 28 summer resorts on California's Angeles National Forest — one of the forests most intensively developed for recreation use. In 1919, national forests counted 3 million recreation visits, including sightseers and those just passing through (USDA Forest Service 1910–1920; Wolf 1990). National park recreation visits did not reach 1 million until 1921 (Clawson and Harrington 1991).

Road construction for purposes other than forest fire protection escalated in the 1920's. By 1930, the total national forest road miles exceeded 59,000 and included almost 15,000 miles of forest highway. Between 1933 and 1942, the CCC built many recreation improvements, including small dams that formed many attractive artificial lakes and ponds; sanitary facilities at picnic and campsites, typically pit toilets with simple structures; and picnic tables and fireplaces (Clawson and Harrington 1991). Road access also expanded so that by 1945, national for-

ests were maintaining more than 100,000 road miles per year. Horse and foot trails, which had increased to more than 113,000 miles by 1930, had risen to 150,000 miles by 1945. This rapidly expanding access to national forests combined with increased automobile ownership and use and a growing U.S. population accelerated the recreational use of national forests (USDA Forest Service 1920–1945). The expansion of recreation areas with constructed shelters and improved camping sites and related facilities likewise contributed to this growth.

Annual visits to national forest recreation sites reached a peak of 18 million, but declined to 6 to 8 million during World War II. During the 1905 to 1945 period, national forest visitors engaged in camping, picnicking, swimming, boating, hiking, and riding. Some came to spend time at summer homes or resorts located on national forests. Others came to enjoy the excellent opportunities that national forests offered for skiing, tobogganing, and other winter sports.

### **Wilderness Preservation**

In the early 1920's, the idea of setting lands aside for wilderness preservation emerged on national forests in Colorado and New Mexico. Two foresters, Arthur Carhart and Aldo Leopold, persistently urged that scenic parts of the National Forest System be withheld and retained in as near a natural state as possible (Clawson and Harrington 1991). Forest Supervisor Leopold identified such a wilderness area on New Mexico's Gila National Forest, and it was so designated in 1924 — the first formally designated wilderness in the country. As this concept was evaluated, it was differentiated to distinguish wilderness areas as those of 100,000 acres or larger; smaller areas down to 5,000 acres as wild areas; other areas considered but not yet classed for wilderness as primitive areas; and some tracts without road access as roadless areas. By 1945, almost 15 million acres, 8.5 percent of the national forest area, had been administratively withdrawn from commercial development for wilderness evaluation. Almost 10 percent of the 15 million acres were formally dedicated as wilderness; most of the rest were classed as primitive, with smaller acreages in the wild and roadless categories. Wilderness areas were then viewed as scenic, limited use, and no development areas — a

part of the National Forest System serving those who sought a remote, pre-settlement type of recreation experience. Because so much of the national forests were *de facto* wilderness, largely unaccessed and undeveloped old-growth timber, the criteria for defining wilderness were highly restrictive and oriented toward the most unique undisturbed lands suitable for this use.

### Natural Areas for Research

During the early formation of the national forest wilderness preservation concept, a parallel idea emerged for preserving selected areas as research natural area (RNA) reserves. RNA's were then viewed as baseline areas for documenting the development of individual natural ecosystems and forest types that would be used to evaluate the effects of national forest use and management on ecosystems.

The RNA concept reflected concerns that emerged within the Ecological Society of America in 1917 to protect habitats of rare plant and animal species. To that end, the Society set up a work group that ultimately evolved into The Nature Conservancy. The Forest Service adopted the RNA concept in 1927, when it set aside the first such area on Federal land — the Santa Catalina Natural Area on Arizona's Coronado National Forest. By 1945, a total of 39 RNA's, with an aggregate area of 45,808 acres, had been established on national forests — an average of a little more than 1,000 acres per RNA (USDA Forest Service 1993b).

### Mining

Miners' unconstrained access to minerals on national forests and other public lands began to gain national attention in 1909, when President William Howard Taft, concerned about the Navy's



*View of the Gila Wilderness, Gila National Forest, New Mexico. In 1924, it was the first national forest land to be designated as wilderness.*

fuel supply, withdrew 3 million acres of oil land in Wyoming and California from public entry. In 1910, Congress authorized the President to withdraw public lands temporarily from mining for nonmetallic minerals (oil, gas, shale oil, coal, natural asphalt, bituminous coal) and the fertilizer and chemical minerals (phosphate, potash, and sodium), and the President withdrew essentially all unappropriated public lands from such mineral entry. Between 1910 and 1920, conservationists actively pursued the development of a leasing approach to fuel and fertilizer minerals on public lands and achieved their goal with the passage of the Mineral Leasing Act of 1920. This Act authorized the Secretary of the Interior to lease nonmetalliferous minerals at his discretion and to define use guidelines that would protect public resources and the public interest. National forest managers had little influence over mineral leasing on national forests except to review lease applications and plans (Wilkinson and Anderson 1985).

### Hardrock Minerals

National forests are underlain with a significant share of the Nation's hardrock mineral wealth. Where such lands were more valuable for their

mineral use than forestry purposes, the Organic Act of 1897 provided that they be excluded from the forest reserves. Thus, the forest reserves (national forests after 1907) remained open to legal entry for mineral exploration and mining under the General Mining Law of 1872. The 1872 law provided that gold, silver, and other hardrock minerals in the public domain (including national forests created out of the public domain as provided in the Organic Act of 1897), could belong to the "finder" of a valuable mineral deposit by merely staking a claim.

Entry into national forests for mineral exploration and mining was a matter of self initiation; no permit was required. A claim was set at 20 acres, with no limit on the number of claims that could be filed. An unpatented claim gave the finder the exclusive right of possession and use of all surface resources within a claim's boundaries to develop the claim. An unpatented claim could be held by completing \$100 worth of work on it each year or by paying

\$2.50 per acre (\$5.00 for placer claims) to obtain ownership (patent) of the minerals and all surface rights. A patent could be obtained by showing sufficient mineralization to justify a "prudent man" making further expenditures on the claim with a reasonable prospect of success (Wilkinson and Anderson 1985).

In the early decades, the national forest manager's role in mineral prospecting and mining development was not defined by law. The Transfer Act of 1905 gave the Secretary of Agriculture authority to execute all laws affecting national forest lands except those "as affect surveying, prospecting, appropriating, entering ... or patenting of any such lands." The administration of such laws remained with the Department of the Interior (Wilkinson and Anderson 1985), but the Department of the Interior regularly sought national forest managers' advice on the validity of claims that miners sought to patent. Thus, from the beginning, national forest managers recognized

that "mining claims ... may be sought for, located, developed and protected in accordance with the law and the forest reserve regulation" (USDA Forest Service 1905). The Forest Service made no attempt to regulate valid prospecting and mining activity (Wilkinson and Anderson 1985), but national forest regulations restricted mining claim occupancy and use to the activities necessary to develop such claims. That often included the issuance to miners of free-occupancy permits and free-use timber permits to build cabins on national forest lands beyond their claim boundaries.

The national forest managers' role in reviewing claim patent applications was limited to assessing the



*View of the Santa Catalina Research Natural Area in the Santa Catalina Mountains, Coronado National Forest, New Mexico. In 1927, it was the first such area to be established on national forest land.*

mineral find's validity for practical development, determining whether mineral development was compatible with overlapping or adjacent national forest uses, and ensuring that the claim's surface resources would only be used for mineral development activities. Doubtful claims, those with evidence of fraud or failure to comply with mining law requirements, were always examined on the ground by a practical miner or a mining expert. National forest managers made adverse recommendations to BLM only when a miner or a mining expert certified to the *malefides* of the case (USDA Forest Service 1912).

Fraudulent mining claims were a continuing problem on national forests throughout the 1905 to 1945 period. The *Report of the Forester for Fiscal Year 1913* reported that "frauds committed or sought to be committed in the name of the mining industry (under the 1872 Mining Law) were legion, all but a very few of them are only remotely, if at all, connected either with mines or mining" (USDA Forest Service 1913). Such claims were located to get title to land for a variety of purposes: for townsites; to access scenic surroundings; to control access to timber sales negotiated by the national forests; for summer home sites; to control stock watering places or mineral and medicinal springs; to acquire farmable lands without meeting homestead law requirements; to obtain power and reservoir sites; for transmission line rights-of-way; and for saloons and other enterprises not permitted on national forest land. More than a decade later, the *Report of the Forester for Fiscal Year 1926* (USDA Forest Service 1926) reported on continuing fraudulent mining claims using high-value national forest lands worth from \$1,000 to \$2,500 per acre for business, recreation, and water power development or for controlling access to resources on large adjoining national forest areas. These were essentially attempts to obtain national forest lands through misuse of mining laws — requiring the Government to make heavy cash outlays to identify fraudulent claims and cancel them. The Forest Service sought legislative relief from Congress, but was only successful in obtaining it for particular situations on a few national forests.

The problem of mining law abuse continued to grow to the end of World War II. Of nearly a million acres on 36,000 patented claims, only 14.7 percent had been worked on a commercial basis. For another 2.2 million acres on 84,000 unpatented claims, less than 3 percent was being actively developed beyond the \$100 of work to hold the claim. The timber inventory on these lands exceeded \$50 million. At the end of World War II, mining law abuse was to become a priority national forest issue.

### Management of Special Uses

Special uses include all resource uses other than commercial timber sales, forage grazing, occupancy established by the Federal Power Commission, and the U.S. homestead laws. Special use permits could be issued for the following uses: residences, farms, pastures, corrals, apiaries, dairies, schools, churches, roads, trails, telephone and telegraph lines, stores, sawmills, factories, hotels, stage stations, sanatoriums, camps, wharves, miners' and prospectors' cabins, windmills, dipping vats, reservoirs, water conduits, powerhouses and transmission lines, aerial tramways, railroads, and the purchase of sand, stone, clay, gravel, hay, and other products except timber (USDA Forest Service 1907). The list broadened over time.

Special use permits were seen as promoting the welfare of individual users and the larger community living in and near the national forests. The permits provided a means whereby any forest resource, no matter how minor, could be turned to individual account if its use did not conflict with a larger community interest and it was compatible with national forest purposes (USDA Forest Service 1913). A special use permit required a formal application for the use or occupancy of national forest lands and resources and specified use conditions such as area, time, and management requirements and standards. Special use permits numbered about 4,000 in 1905. They increased to 19,000 in 1915. By 1941, they numbered 44,000. Between 1905 and 1945, permitted uses involved only a negligible percentage of the national forest area, but served large numbers of users. Use permits involving the payment of annual fees ranged from 40 to 60 percent of the total permits issued. The balance were free-use permits. Pay permits were issued where uses were commercial,

served industrial purposes, or involved exclusive private use such as summer recreation residences.

Free permits were issued for uses of a public nature, such as cemeteries, Girl and Boy Scout organizational camps, and access roads to private homes or inholdings, and uses such as rights-of-way that were needed to carry out other national forest land uses. Free-use permits were granted to settlers, farmers, prospectors, or similar persons who might not reasonably be required to pay a fee and who did not have a usable supply of timber or stone on lands they owned or controlled.

During the early 1930's, the Forest Service repeatedly sought authority to raise the occupancy permit acreage limit from 5 to 80 acres. National forest managers felt that in many cases the 5-acre minimum was too low to provide for the best development of occupied areas and service to the public. Where additional area was needed, national forest managers could issue only a separate, terminable permit. This option was considered insufficient and lacked secure tenure for longer term occupancy uses such as airplane landing fields, educational institutions' scientific stations, or high-quality resorts. Congress, however, did not choose to extend the 5-acre maximum permit limit.

### **Homesteading**

The Organic Act of 1897 excluded lands more valuable for agriculture from the forest reserves. The Department of the Interior encouraged entry and settlement of such agricultural lands under the liberal terms of the Homestead Act of 1862, which it administered. When the reserves were transferred to the USDA, the exclusion remained in force, and the Department of the Interior continued to administer the entry and settlement of these agricultural lands.

There was strong demand for and pressure to enter and settle these lands, often improperly for speculative timber acquisition and sale or other nonagricultural uses. Often homestead ownership was quickly transferred to timber companies. While not technically violating the law, the intent of the Homestead Act was clearly not being met. This situation, under national forest administration, quickly led to the passage of the Forest Homestead Act of 1906. The

1906 Act encouraged homesteading on national forest lands, but only on lands which national forest managers determined were more suitable for agricultural use. Having settlers on forest homesteads was seen as a benefit to forest protection and a way of thwarting speculative homesteading under the more liberal 1862 law.

Between 1900 and 1910, settlers were awarded a total of 18,000 homesteads on 1.9 million acres. The pressures for entry to these agricultural areas after 1906 (and exclusion of entry under the 1862 law) continued until the demand for new farmland abated during the mid-1920's agricultural depression. By 1926, practically all national forest lands suitable for agriculture had been listed as available for entry for the previous 5 to 15 years. Many areas remained open after a series of earlier entries and abandonments — unpatented and unoccupied — indicating a somewhat optimistic classification for agricultural use. By 1930, entry applications under the Forest Homestead Act had declined to less than 100 per year. In 1934, Congress withdrew homesteading entry under the 1862 Homestead Act on all public lands except those in Alaska. Entry under the Forest Homestead Act remained extant through 1945. In 1937, however, the Forest Service reported that practically no agricultural land remained suitable for homestead entry on national forests. In 1940, there were only 36 applications (USDA Forest Service 1905–1945). Only a few homesteads established on national forest lands actually succeeded as farms; most failed. Failure was attributed to a combination of low soil fertility, low rainfall, climate with a short growing season, and the agricultural depression in the 1920's.

### ***National Forest Use and Management at the End of World War II***

At the end of World War II, national forests were still huge, largely undeveloped reserves of natural resources. They were still remote and difficult to reach by the majority of the U.S. population, which was concentrated in the East. Access to national forests was very limited. Western forest industries were getting most of their log supplies — about 80 percent — from their own and other private lands. The eastern national forests, still being rehab-

ilitated, had little merchantable timber available. National forest timber harvesting — mainly in the West — and mineral exploration and development had been accelerated to meet wartime needs. National forest livestock numbers were at their lowest level since 1906. Rangeland conditions were improving. Due to the influence of wartime demands and conditions, recreation use was still depressed.

The maintenance and management of national forest resources and improvements were largely foregone or deferred during World War II. Military service and diversion of available staff to wartime priorities reduced the national forest workforce. The depressed management situation, however, would go into rapid reverse as the postwar Baby Boom and rapid economic growth accelerated demand for national forest goods and services.

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